FRONTAL MUCOCELE: A CASE REPORT
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ABSTRACT

\textbf{Background:} Mucocele is a rare slow-growing benign intracranial pathology arising from the paranasal sinuses. \textbf{Case Report:} A 45-year-old Saudi male, presented with a history of nasal obstruction, headache and loss of smell for one year. Nasal examination revealed bilateral nasal polyps filling both nasal cavities. The radiological diagnostic procedures revealed a homogenous mass in both frontal and ethmoid sinuses that destroyed the posterior and inferior walls of the left frontal sinus and extended into the anterior cranial fossa. The mass was isointensive to the brain on the T1-weighted images. A bicoronal supra-orbital incision was done which revealed a green-gray encapsulated soft tissue filling completely the left frontal sinus and the ethmoid sinuses. The posterior and inferior wall of the frontal sinus was destroyed and the mass involved the anterior fossa. Resection of the pathological mass was achieved. Frontal mucosa was completely removed. The sinus was irrigated with saline. Cannulation of frontal recess with small tube which was used as a stent. The anterior table bony defect was repaired with a metallic mesh. Histopathology reports confirmed the diagnosis of mucocele. Postoperatively, patient’s symptoms subsided and there were no complications. Three days later, he was discharged home and the follow up course passed smoothly. \textbf{Conclusion:} A careful surgical plan with combination of open and endoscopic approaches may give better result than a single approach alone.

\textbf{Keywords:} Mucocele, frontal sinus, ENT surgery.
INTRODUCTION

Mucocoeles are mucus-filled pseudocystic formations that are initially limited by bony walls which are expanded progressively.\(^1\) Mucocele is a rare benign intracranial pathology arising from the paranasal sinuses.\(^2\) Mucoceles are slow-growing lesions that develop after obstruction of the sinus ostium.\(^3\)

Mucoceles usually occur in the fronto-ethmoidal region, possibly because of the complexity of this region’s anatomy and drainage.\(^4\) They may expand and invade nearby vital structures such as the skull base and orbit, causing intracranial and/or orbital complications.\(^5\)

The etiology of mucocoeles is multifactorial, which involves inflammation, allergy, trauma, anatomic abnormality, previous surgery, fibrous dysplasia, osteoma or ossifying fibroma. Nasal polyposis is associated with chronic inflammation and causes obstruction, and hence, is related to the occurrence of spontaneous or non-surgical-related mucocoeles.\(^6\)

The diagnosis of mucocoele is based on a clinical investigation conducted with the aid of computed tomography (CT) and magnetic resonance (MR) imaging. CT is used in determining the regional anatomy and extent of the lesion, specifically the intracranial extension and the bony erosion. MR imaging is useful in differentiating mucocoeles from neoplasms via contrast enhancement.\(^1\)

Management of mucocoeles is mainly by surgery, which ranges from functional endoscopic sinus surgery to craniotomy, and craniofacial exposure, with or without obliteration of the sinus.\(^7\)

We report a case of a patient with a giant mucocele of both frontal sinuses extending into both frontal regions.

Case report

In January 2010, a 45-year-old Saudi male, presented to the ENT Department of the Armed Forces Hospital, Southern Region, Khamis Mushayt,
Kingdom of Saudi Arabia with a history of nasal obstruction, headache and loss of smell for one year. There were no allergic symptoms, trauma, past history of surgery or other ENT symptoms. The patient was diabetic on oral hypoglycemic agents.

Nasal examination revealed bilateral nasal polyps filling both nasal cavities. The radiological diagnostic procedures with computed tomography (CT) and magnetic resonance imaging (MRI) were performed, which revealed a homogenous mass in both frontal and ethmoid sinuses that destroyed the posterior and inferior walls of the left frontal sinus and extended into the anterior cranial fossa. It was involving the sphenoid sinus and encroaching upon both carotid arteries (Fig. 1). The mass was isointensive to the brain on the T1-weighted images.

A bi-coronal supra-orbital incision was done (Fig. 2). It revealed a green-gray encapsulated soft tissue filling completely the left frontal sinus and the ethmoid sinuses. The posterior and inferior wall of the frontal sinus was destroyed and the mass involved the anterior fossa. Resection of the pathological mass was achieved. Frontal mucosa was completely removed. The sinus was irrigated with saline, and cannulation of frontal recess was done with small tube, which was used as a stent. The anterior table bony defect was repaired with a metallic mesh. Histopathology reports confirmed the diagnosis of mucoccele.

Postoperatively, patient’s symptoms subsided and there were no complications. Three days later, he was discharged home and the follow up course passed smoothly.

**DISCUSSION**

Mucocceles develop following obstruction of the drainage ostia, growing slowly within the sinuses, eventually eroding adjacent bone structures.\(^{(8)}\)
Symptoms of the currently reported case of mucocele were quite vague and not specific, i.e., nasal obstruction, headache and loss of smell for one year. Consequently, the diagnosis could be reached based mainly on radiologic and histopathologic grounds. Symptoms were not specific, i.e., nasal obstruction, headache and loss of smell for one year.

Sakae et al.\textsuperscript{(8)} noted that the diagnosis is made based on the clinical history, physical examination and radiologic imaging. Symptoms vary in frontal ethmoid mucocele from absence of symptoms to incapacitating pain, headache and visual disturbances.

The definitive treatment of mucocele is surgery. Surgical treatment of mucoceles can be accomplished with a minimally invasive endoscopic procedure or craniotomy with craniofacial surgery.\textsuperscript{(9)} Moreover, endoscopic surgery has increased the safety and efficacy of intranasal marsupialization for the treatment of mucoceles in all paranasal sinuses.\textsuperscript{(10)}

In conclusion, a careful surgical plan with combination of open and endoscopic approaches may give better result than a single approach alone.
REFERENCES


Figure (1): MRI showing posterior extension of mucocele bilaterally

Figure (2): Bicoronal eye brow incision and mucocele sac removal